

A CHECK-LIST OF THE SPECIES OF *ELEODES*
AND DESCRIPTIONS OF NEW SPECIES
(COLEOPTERA-TENEBRIONIDAE)¹

Vasco M. Tanner

INTRODUCTION

Prior to the publication of the monumental contribution, "A Monographic Revision of the Coleoptera Belonging to the Tenebrionidae Tribe Eleodiini Inhabiting the United States, Lower California and Adjacent Islands," in 1909 by Frank E. Blaisdell, Sr., approximately 90 species of this tribe had been described from America North of Mexico. It was Dr. Blaisdell's interest and critical work that has made known this important and conspicuous Coleopterous fauna of the South-Western United States. He described 125 of the 233 species and subspecies of the tribe Eleodini as included in the check-list of this study.

Dr. Blaisdell, in his monograph, instituted a nomenclatural departure that of considering specimens of a series which showed a constant variation from the typical specimens of the species as a *forma*. In explanation of this procedure the following is quoted:

"Furthermore, in order to systematically deal with their many minor degrees of divergencies exhibited by individuals that are presumably the progeny of parents specifically or racially identical, I have deemed it conservative and scientific to recognize incipient races and incipient subraces. In accordance with this view I have used the name *forma* to make it possible to relatively define aggregations of individuals possessing some particular or salient characteristic; it is believed that these divergent characters have arisen through local or general climatic or environmental conditions acting upon the progeny of parents specifically or racially identical.

"In other words, the several *formae* enumerated under *Eleodes dentipes* may arise from eggs deposited by a single *typical* female, under the influence of climatic, geographical or environmental conditions capable of producing such divergencies.

"A Latin name has been used to express the salient characteristic of any given *forma* and these characteristics may be similar for each species or variety. A species or variety may have smooth and rough, short and elongate, small and large, caudate or ecaudate forms, consequently a repetition of Latin names is called for.

"These terms are absolutely synonymous with the specific or varietal terms and must not be perpetuated as distinct grades, but simply used as an aid in recording date, and as a compromise between unscientific lumping or splitting, or the difference between 47 and 400 species.

"Logically the present treatment ought not to seriously collide with the rules of the International Code governing nomenclature."²

In spite of Dr. Blaisdell's pronouncement, Mr. Leng, in 1920, listed in the "Catalogue of the Coleoptera of America, North of Mexico," the *formae* as contained in Blaisdell's Monograph. There has been some confusion and misunderstanding as to the status of

1. Contribution No. 177. Department of Zoology and Entomology, Brigham Young University, Provo, Utah.

2. Blaisdell, Frank E. 1909. Preface, p. v-vii.

the *formae*. This is due mainly to the fact that Dr. Blaisdell elevated several of the *formae* to higher rank. By 1925, he had published descriptions for many of the *formae*, elevating them to species or subspecies rank. In his "Studies in the Tenebrionidae No. 2, 1925b" he has the following to say about his stand in this matter:

"In the mass of heterogeneous material upon which I based my monograph, there were numerous instances in which the specimens were too few for a correct and definite understanding of the relationships; as a result, many subspecies and races were not recognized and unwittingly considered as *forma*, not wholly from ignorance in many cases, but more truly as acts of conservatism, I having believed it to be more logical and truthful to raise than to lower a grade, whenever more positive data warranted it.

"The raising of certain *forms* to a definite grade does not invalidate the conception of such intra-specific groups, for even then the specific aggregates will be made up of variants, as no two individuals of any species can be exactly alike as regards to size, form, sculpturing and color, no matter how much restricted taxonomically.

"In 1909 I presented the conception of *forms* as a means of directing attention to the variation within specific units so as to make them objects of research. I advised that forms should not be given a place in a check-list, for on the face of the matter they are absolute synonyms according to the author and from the standpoint of taxonomy."

The fact that Dr. Blaisdell, by 1925 had described many of the *formae* listed in his monograph, as species or subspecies is clearly brought out in his paper: "Revised Check-List of the Species of *Eleodes* Inhabiting America, North of Mexico, Including Lower California and Adjacent Islands, 1925c." In this study he points out that: "This list is intended to replace the one given by Leng in the "Catalogue of the Coleoptera of America, North of Mexico." References are given for the species and phases not given in the Leng Catalogue. This list includes 106 species, 67 subspecies, and 12 varieties.

He further comments, "In my Monograph of the Eleodiini (Bulletin 63, United States National Museum) no attempt was made to designate subspecies. In the present list this has been done, based on more recent observations."

In 1916 the writer began making a collection of Tenebrionidae. This year and 1917 *Eleodes hispilabris* subsp. *sculptilis* Blais. was abundant in the dry land Turkey Red wheat field at Indianola, Sanpete Co., Utah. Associated with this species was *E. obscura sulcipennis* Mann. Large areas, 50 to 100 yards in diameter, throughout the wheat fields were killed by the larvae of these beetles. Specimens of these same species were collected in 1916 at Zion National Park, St. George, and Parowan, Utah, and Fredonia, Arizona. In 1920 I began corresponding, submitting specimens for determination, and exchanging specimens with Dr. Blaisdell. I soon found him to be most prompt and generous with a beginning collector and student of Entomology. During the intervening years until his death July 6, 1946, we carried on an exchange of specimens, which resulted in my building up a fairly complete collection of most of the species and subspecies of the genus *Eleodes*. From 1926 until 1939 I collected in

most all parts of Utah and some contiguous states. In 1927-28, some specimens closely related to *Eleodes pilosa* were collected in South Eastern and Western Utah. Some of these specimens I submitted to Dr. Blaisdell for his identification.

He reported that these specimens represented a new species and that he intended to describe them. Unfortunately, he never published a description of this species, nor of several formae³ which he intended to raise to subspecies.

For the past few years I have been arranging the specimen of Tenebrionidae in my collection and have decided to report on the species of the subgenera *Tricheleodes* and *Pseudeleodes*. Through the kindness of Mr. Hugh Leech of the California Academy of Sciences, I have received by loan specimens mentioned above which Dr. Blaisdell had studied.

In this study an attempt has been made to bring together in one article keys for the separation of the genera of the Eleodini and the subgenera of the genus *Eleodes*. Two new species are described and drawings of four related species are included. An up to date checklist of the species of the genus *Eleodes* forms an essential part of this study.

ACKNOWLEDGMENTS

I wish to acknowledge the many kindnesses shown to me by past and present members of the staff of the Department of Entomology of the California Academy of Sciences: Drs. Frank E. Blaisdell, Edwin C. Van Dyke, Edward Ross, R. E. Miller and Mr. Hugh B. Leech who have cooperated in many ways with the writer while studying at various times at the Academy. Mr. Owen Bryant liberally contributed, to me, of his specimens of Tenebrionids. Dr. Ira La Rivers and Mr. Ted Spillman have been helpful in furnishing specimens. The staff and students of the Department of Zoology and Entomology at Brigham Young University have been helpful in collecting and making available Tenebrionidae from many parts of Utah. To all the above I express my thanks.

CLASSIFICATION OF THE ELEODINI

The accepted classification of the Tenebrionidae under consideration here, according to Dr. Blaisdell 1939, is as follows:

The family Tenebrionidae may be recognized and separated from other Heteromera Coleoptera as follows:

Front and middle tarsi five-jointed; the hind tarsi four-jointed.
Anterior coxal cavities closed behind ventral abdominal segments five, in part connate.

Tarsal claws simple, the penultimate joint of the tarsi not spongy beneath.

3. Only formae described and published since 1909, by Blaisdell or other workers, are included in this checklist. As this writer interprets the 1959 nomenclatural rules, the formae of Blaisdell's monograph, 1909, do not fulfill the requirements of the rules, and they are, therefore, not considered as valid subspecies.

SUBFAMILY ELEODINAE BLAIS. 39-49

This subfamily replaces Blaptinae which is based upon *Blaps*, a European genus. Blaisdell contends that: "The members of a subfamily should consist of those species that have descended from a common ancestral form. That being the case, the tribe *Eleodini* as now considered as (is) in no way closely related to the Blaptinae (*Blaps* of Europe, etc.), but belong to the subfamily *Eleodinæ*, the members of which have had their origin in Western North America, in the Sonoran Regions of the United States and Mexico."

TRIBE ELEODINI (ELEODINI) BLAIS. 1909

The tribe *Eleodini* is confined to Lower California and adjoining islands; Northern Mexico and South Western United States. In 1943, Dr. Blaisdell recorded twenty-five species and subspecies from lower California. In this study, forty-six species and subspecies are reported as occurring in Utah.

Dr. Ira La Rivers, 1948, p. 98, has proposed a Key for the Genera comprising the *Eleodini*. He considers *Neobaphion* a subgenus of *Eleodes*, and that the "subtribal segregation on the basis of morphology is further reflected in the habits of the units involved. The *Eleodina* are wanderers, *Trogloderus* semi-fossilial and *Lariversius* markedly fossorial and restricted to arenaceous areas."

KEY TO THE GENERA OF ELEODINI

1. Sides of the epistoma not dilated 2
 - (a) Sides of the epistoma moderately dilated, margin arcuate *Trogloderus*
 - (b) Sides of the epistoma distinctly dilated; margin of lobes slightly reflexed and rather prominent, surface rather densely punctate, central part of surface, slightly convex *Lariversius*
2. Epipleura attaining the humeral angles, broader at base, more or less gradually narrowing to apex 3
 - Epipleura very narrow, not attaining the humeral angles *Embaphion*
3. Epipleura occupying only a part of the inflexed portion of the elytra; buccal processes of the genae not produced 4
 - Epipleura occupying the whole of the inflexed portion of the elytra; buccal processes of the genae acutely produced *Eleodimorpha*
4. Front margin of anterior femora feebly laminate in each sex; the anterior tibial spurs dissimilar in the sexes; tarsi similar in the sexes; elytral disc flattened *Neobaphion*
 - Not with the above combination of characters *Eleodes*

GENUS ELEODES ESCHSCHOLTZ

The family Tenebrionidae is one of the largest families of beetles in America North of Mexico. It is represented by 1440 described

species and subspecies of which 210 belong to the genus *Eleodes*.

Species of this genus are commonly met with in the Great Basin region and contiguous states. The large size of most of the species, their apterous condition, their presence as ambulators on the desert sands and open areas makes of them familiar insects to most of mankind in this South Western Country. Their food is principally dry vegetable matter and fungi, however, the larvae, false wireworms, of some species of *Eleodes* do considerable damage due to their feeding on the roots of grains and grasses. Hibernation takes place in the adult or partly grown larval stage. The females lay their eggs in the soil, which under favorable condition hatch in about four months. Pupation takes place in the soil, lasting from two to three weeks. When the adults emerge, they mate and late summer eggs are laid. The larvae hatching from these eggs hibernate in a partly grown stage.

Some of the distinguishing characteristics possessed by all species of *Eleodes* are: Mentum trilobed, middle lobe larger and convex; apical joint of labial and maxillary palpi triangular; suture between epistoma and front distinct; eyes reniform; antennae with eleven segments, the last three usually compressed. Prothorax variable in shape and sculpture, in some species prolonged into a cauda behind; epipleura distinct. Legs fairly long, femora not strongly clavate, in some species armed in one or both sexes with teeth; tarsi usually channeled and setose beneath. Spurs of the middle and hind tibiae well developed.

A key to the species of *Eleodes* cannot be included in this paper, due to a lack of the completion of a study of the genitalia and specimens of several rare species. Dr. Blaisdell's classification and systematic conclusions as to the fine points which separate a species and subspecies of this genus were based upon his knowledge of the genitalia and morphology of these insects.

Few students of this group pay the price of becoming informed on the morphology of the genital structures. Until this is done, changes and synonymizing of taxa of this group will be hazardous.

It is hoped that the key to the subgenera of *Eleodes*, along with an up to date checklist, additional distribution data, and a listing of pertinent literature on the group will be of help to those who deal with this Tenebrionid tribe.

SYNOPSIS OF THE SUBGENERA OF THE GENUS ELEODES

(Blais. 09-35 with additions)

"The subgeneric divisions of the genus *Eleodes* Esch. constitute groups of species possessing certain characters which differentiate them from each other. The subgenus *Blapylis* Horn is based on the tarsal pubescence and correlated genital characters. The subgeneric specific units, by differential characters fall naturally into groups; these are named after the species which have priority in description and publication." Blais. 35-29.

Anterior femora at least, armed in both sexes (except in

- caudifera* and *longipilosa* where the teeth are abortive) *Eleodes*
- Anterior femora armed only in the male or mutic.
- Anterior tibial spurs dissimilar in the sexes; femora mutic *Melaneleodes*
- Anterior tibial spurs similar in the sexes.
- Tarsi similar in the sexes, or nearly so.
- Middle lobe of the mentum large, lateral lobes rudimentary, invisible without dissection; anterior tarsi with first joint more or less slightly thickened at tip beneath; anterior femora armed or sinuate *Discogenia*
- Middle lobe of the mentum small; anterior tarsi comparatively simple beneath, groove entire.
- Lateral lobes of the mentum fully exposed; sculpturing comparatively simple; femora mutic .. *Metablapylis*
- Lateral lobes moderately exposed; species opaque to shining; elytra tuberculate; anterior femora not sinuate, mutic *Pseudeleodes*
- Anterior tarsi dissimilar in the sexes.
- Species pubescent throughout.
- Hairs long and flying; femora mutic; anterior tarsi with first joint scarcely produced ventro-apically, ventro-apical spinules noticeable produced in the female, not so in the male; planter grooves distinct *Tricheleodes*
- Hairs short, yellowish and recumbent; form oval, opaque, subdepressed *Heteropromus*
- Species not usually pubescent, rarely so.
- Form elongate, usually large; first joining of the anterior tarsi slightly thickened at tip beneath, bearing a small transverse tuft of yellowish or brownish modified spinules which interrupt the groove in the male; simple in the female *Steneleodes*
- Form elongate subfusiform to subovate facies resembling that of a small *Eleodes* (*Steneleodes*) *longicollis* Lec. Elytra somewhat depressed to moderately convex. Color black, surface more or less polished, punctuation fine, not muricate. Profemora mutic, briefly sinuate beneath at apex. Protarsi and mesotarsi of male with tufts of golden or fulvous pubescence, female with protarsi less thickened beneath *Holeleodes*
- Form ovate or fusiform; the first one or two joints of anterior tarsi in the male more or less thickened and sometimes flattened beneath, densely clothed with fine pubescence; tarsi simple and unmodified in the female; anterior femora armed or mutic *Promus*
- Form short ovate, moderate in size to small, robust

(elongate and depressed in *tibialis*); anterior tarsi of the male with first two or three joints feebly thickened at tip beneath and clothed with dense silken or brownish pubescent tufts, obliterating the groove; joints simple with grooves entire in female; femora mutic *Blapylis*

Form moderately elongate oblong-ovate, more or less depressed and subalabatoid in facies. Color black to piceous; luster dull to more or less shining. Protarsi and mesotarsi with tufts or pads of yellowish pubescence on the apices of the segments beneath, varying in the species *Arpeleodes*

Form ovate, moderate in size, less robust; first joint of the anterior tarsi more or less thickened and slightly more prominent ventrally than the others, pubescent tuft variable, most evident in *extricata*; in the male first joint with a minute tuft of silken pubescence at tip beneath *Litheleodes*

SUBGENUS TRICHELEODES BLAIS. 09-138

As indicated above keys to the species of the subgenera except *Tricheleodes* and *Pseudeleodes* are not contained in this study. The two new species described below necessitated working with the species of the subgenera mentioned above. The genitalia of most of these species have been studied. The spermatheca is an interesting and valuable structure in making separation of genera and species.

The five species of this subgenus may be separated as follows:⁴

- I. Larger species (11.0 to 16.5 mm. in length)
 - a. Setae of the pronotum and elytra distinctly unequal in length, slightly bristly, denser along the margins; pronotum widest at or before the middle, disc convex, punctures irregular, confluent; elytra surface with dense, irregular, small tubercles, from which issue erect black flying hairs. Length 11 to 14.5 mm. *pilosa* Horn
 - b. Setae of the pronotum and elytra sparse, denser below the elytral declivity, on elytra, setae arise from the lee side of large spherical tubercles; pronotum rugose, due to irregular, rather deep punctures; elytra with large shiny tubercles, surrounded with smaller ones. Length 12.6 to 15.5 mm. Fig. 1 *leechi*, n. sp.
 - c. Setae of the pronotum and elytra, not conspicuous, short; pronotum not deeply punctured, asperate like the elytra with small setigerous muricate tubercles.

⁴ The figures Nos. 1-9 portray many of the characters which may be useful in separating the species of the subgenera *Tricheleodes* and *Pseudeleodes*.

Length 12.8 mm. Fig. 2 *spoliata* Blais.⁵

II. Smaller species (6.0 to 10 mm. in length)

a. Setae of the pronotum and elytra shorter, softer;

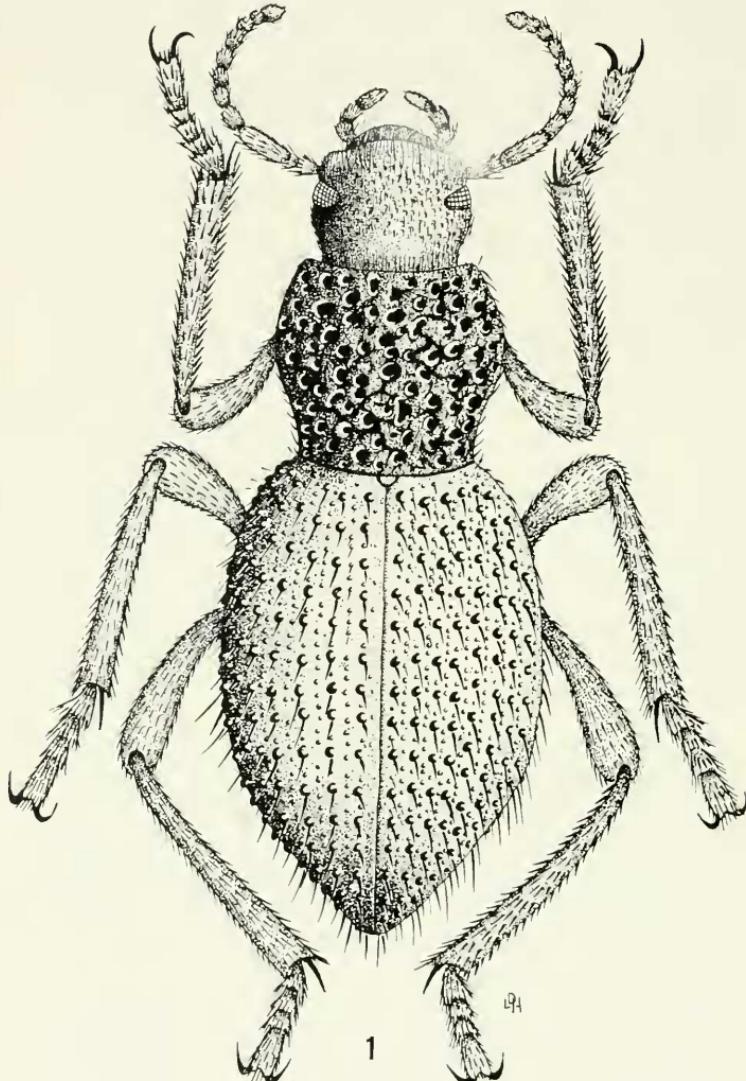
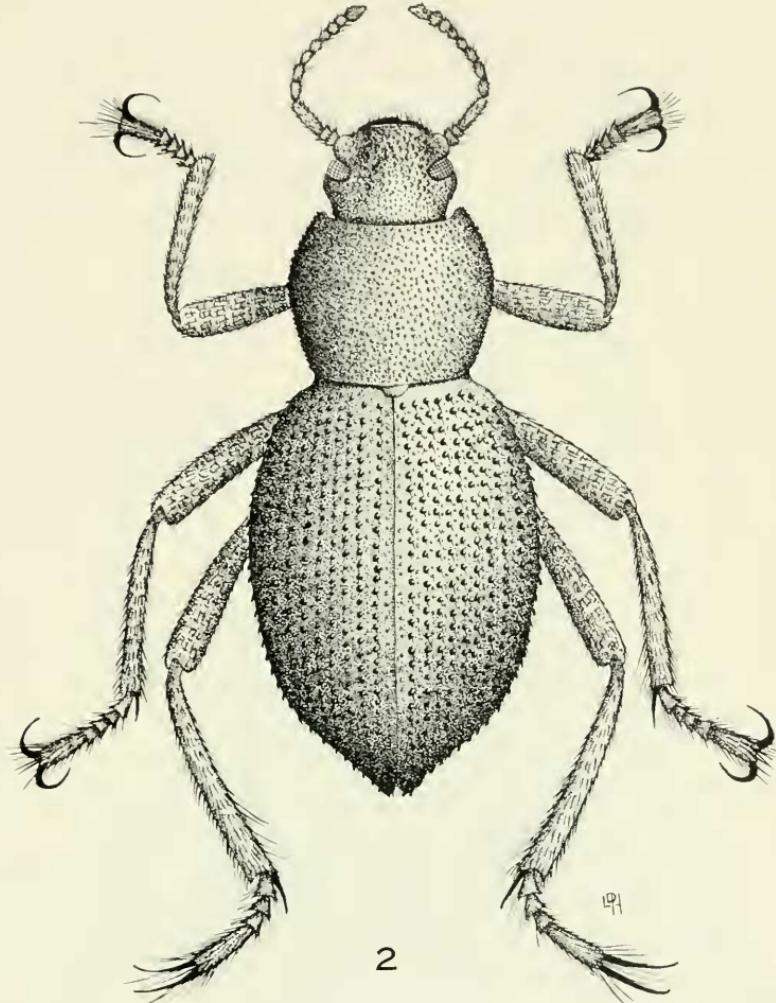


Fig. 1. *Eleodes leechi* Tanner, n. sp.

⁵. I am most grateful to Mr. Hugh B. Leech for the permission to study this unique type specimen. Dr. Blaisdell commented as follows on this species:

"The single specimen has been at hand for about nineteen years waiting for other specimens to be secured. It is a very distinct species and should follow *pilosa* Horn in our lists, as a member of the subgenus *Trichelodes*. In *spoliata* the body is clothed with short setae and not long hairs as in *pilosa*; in the latter species the pronotum is sculptured with large shallow and more or less eroded punctures, while in *spoliata* the pronotum is asperate like the elytra, from small setigerous muricate tubercles." Blais, 33-197.

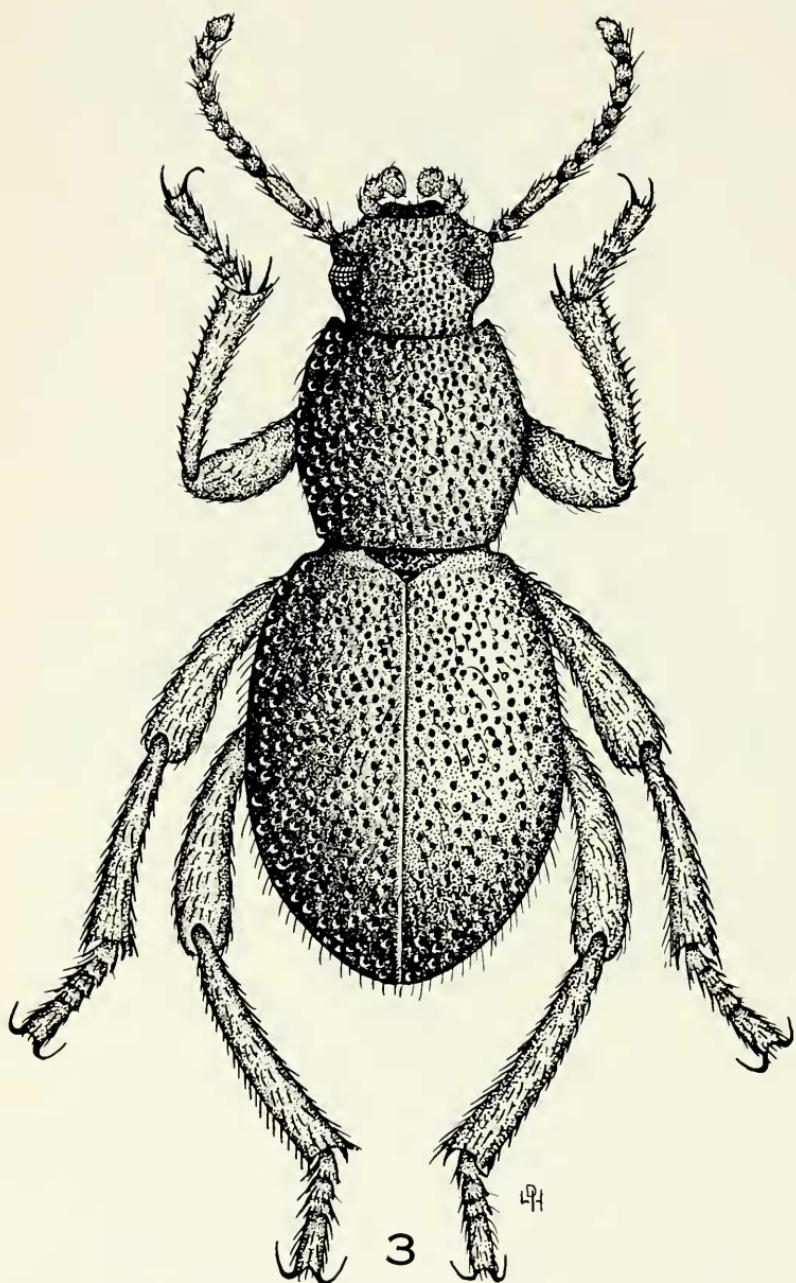
Fig. 2. *Eleodes spoliata* Blais.

pronotum subquadrate, wider than long, widest at middle, densely punctate, interstices glabrous and shining; elytra irregularly punctate, finely muricate, pubescent. Length 7.5 to 10 mm. Fig. 3 *hirsuta* Lec.

- b. Setae of the pronotum and elytra long, black, interspersed with golden curved ones; pronotum widest at middle, longer than wide, shining, punctures strong, deep, separated by own diameters; elytra shining, with densely, deep, serially muricate punctures. Length 6 to 7.25 mm. Fig. 4 *barbata* Wickham

Eleodes leechi, n. sp. Figs. 1, 6, 7, 8

Rather robust, black, shining when clean, head and pronotum strongly punctate, elytra not punctate, but with large tubercles

Fig. 3. *Eleodes hirsuta* Lec.

surrounded with small irregularly placed tubercles; setae sparse black, stuff. arising from lee side of tubercles.

Head convex, with shallow densely placed punctures, hairs fairly

abundant and curved. Antennae reaching humerus of elytra, third segment equal in length to segments four and five combined. Pronotum widest just in front of the middle; disc convex, coarsely punctate, intervals prominent, shining and irregular, setae on lateral margin black, long and some directed inwardly; sides evenly arcuate in apical portion, thence converging to the base, margins distinct to

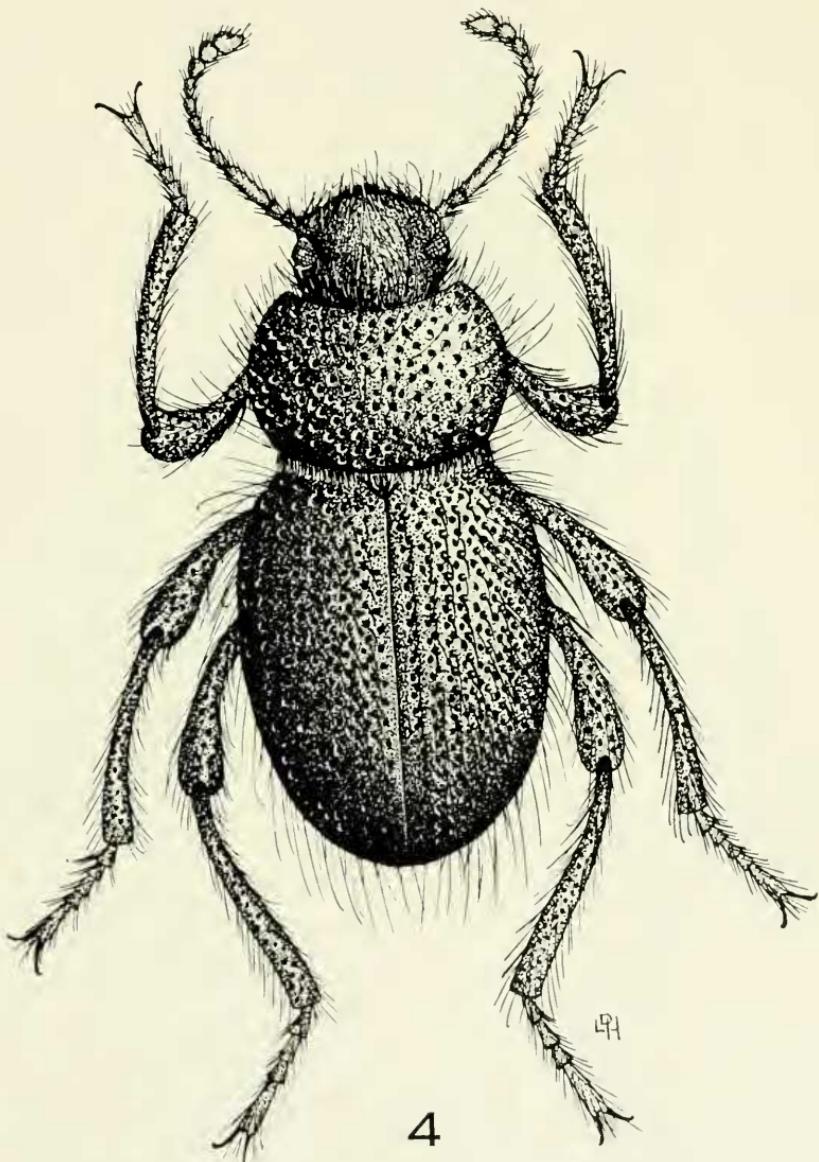


Fig. 4. *Eleodes barbata* Wickh.

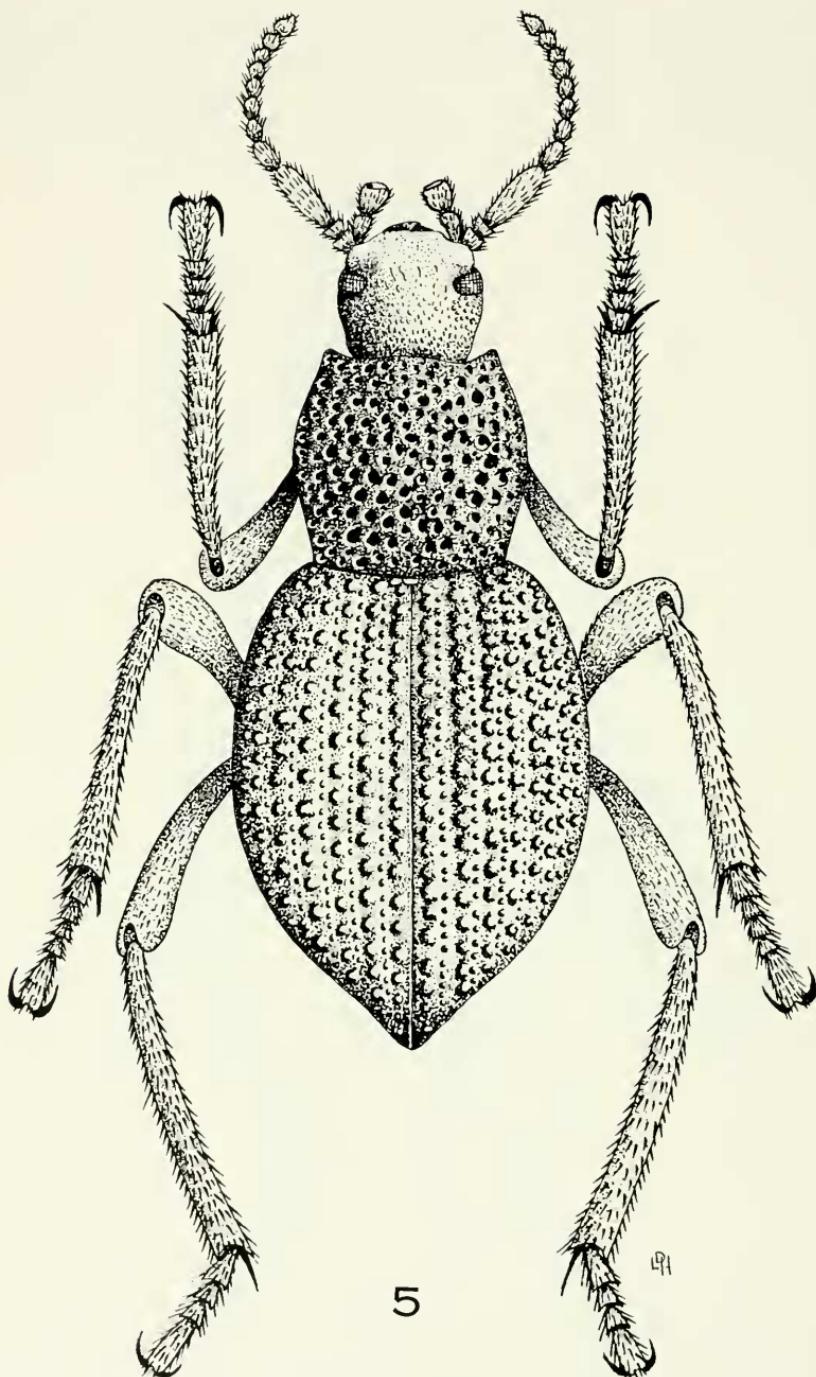
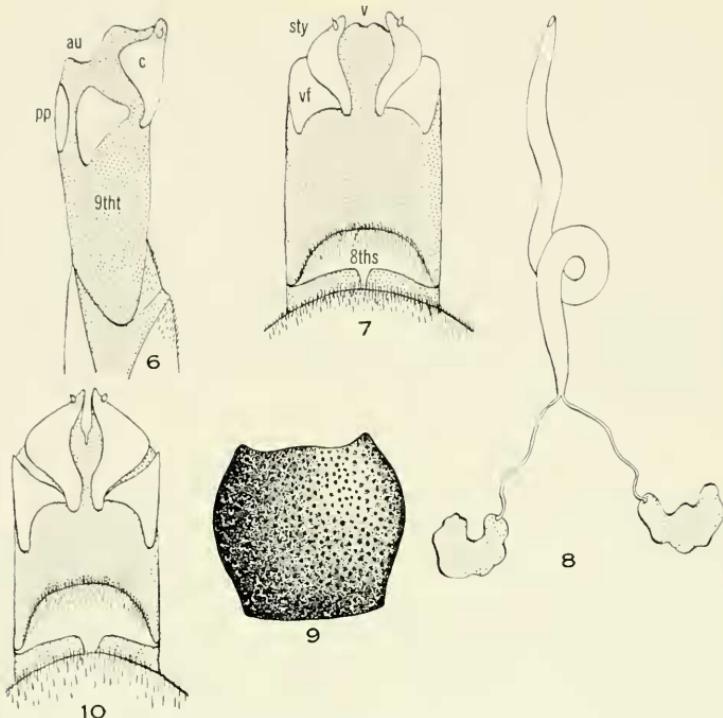


Fig. 5. *Eleodes inyoensis* Tanner, n. sp.



Figs. 6 and 7. Lateral and ventral views of the genitalia of *E. leechi*.

Fig. 8. The spermatheca of *E. leechi*.

Fig. 9. Prothorax of *E. pilosa* Horn.

Fig. 10. Ventral view of the genitalia of *E. inyoensis*.

ABBREVIATIONS

au - anus; c - coxite; pp - paraproct; sty - stylus; vf - valvifer; v - vulva
9ht - ninth tergite; 8ths - eighth sternite.

slightly reduced on apical two-thirds; base equal in length to the apex.

Propleurae granulo-muricate, with black, short curved setae.

Elytra oval, one and one half times as long as wide; base truncate and a little wider than the base of the pronotum; disc convex, arcuately declivitous posteriorly, surface with serially arranged large shining muricate tubercles with decumbent setae arising from the lee side, also with small irregularly placed tubercles, no evidence of striation, although the large tubercles are in rows, hairs sparse, straight, black, and more noticeable at the declivity.

Abdomen shining, strongly convex, impressed between the coxae, less so on the first three ventrites. Tibial spurs longer in the female; in the male moderately short, slender and acute. Genitalia of the female, figs. 6 and 7 are characteristic of the species of this subgenus; however, there are some specific differences. The spermathecae of this group have specific characteristics.

Length 15.5 mm., width 12.6 mm.

TYPE. Female.—Ute Mountain, Utah-Colorado State Line, June

1927, Irvin Rasmussen, Coll. deposited in the Entomological collection of the California Academy of Sciences.

Paratypes: 1 Mesa Verda National Park, Colorado; 1 Gypsum Creek, San Miguel Co., Colorado in the California Academy of Sciences; 1 Cottonwood Wash, 10 S.W. of Blanding, San Juan Co., Ut. in the U. S. National Museum, Entomological collection. 7 in the author's collection, Brigham Young University; 2 Cortez, Colorado, 3 Moab, Grand Co., 1 LaSal, and 1 Blanding, San Juan Co., Utah.

Leechi differs from other species of the *pilosa* group in having well developed shining round tubercles with setae arising from the lee side. In *pilosa* there are no large round tubercles. The coarseness of the pronotum and the round setigerous tubercles are unique.

I am pleased to name this species in honor of Mr. Hugh B. Leech, a good coleopterist and curator.

SUBGENUS PSEUDELEODES

The two species of this subgenus may be separated as follows:

1. Prothorax with dense shallow punctures; interstices smooth, fig. 9; elytra opaque not hairy, with rows of round-ed tubercles *granosa* Lec.
2. Prothorax densely, deeply and confluent punctate, interstices smooth and convex, elytra with large shiny tubercles on the intervals, small tubercles along the striae area. Tubercles devoid of setae except obscure ones along the caudal margins. Figs. 5, 10 *inyoensis*, n. sp.

Eleodes inyoensis, n. sp. Figs. 5, 10

Ovate, coarsely sculptured and convex. Head wider than long, densely punctate, the punctures of the genae and epistoma coalescent and finely setigerous. Antennae reaching a little beyond the humerus the distal segments compressed, third joint as long as the next two combined.

Prothorax subquadrate, widest a little before the middle, dorsal surface deeply and irregularly punctate, some punctures confluent, interstices smooth and shining, punctures on lateral area smaller and not so deep; apical angles rectangular, not rounded. Basal angles subrectangular, not prominent, Fig. 5.

Propleurae musicato-granulate.

Elytra oval, less than twice as long as wide; base truncate rounded, wider than the prothoracic base; surface with large shining slightly ovate tubercles, arranged in rows with small tubercles along the smooth intervening striae areas; devoid of setae, however, the larger tubercles are obscurely muricate.

Abdomen horizontal, slightly opaque with small muricate tubercles; setae sparse on ventrites. Legs moderate, femora finely punctate, mutic not sinuate. Anterior tibial spurs, equal in size and length, abdomen of female more convex than the male.

LENGTH. Female 18.5 mm., Male 15 mm.

TYPE. Female, Saline Valley, Inyo Co., California, June 8, 1959,

B. H. Banta Coll., deposited in the Entomological collection of the California Academy of Sciences.

PARATYPES. 22 - Saline Valley, Inyo Co., Calif., in author's collection, Brigham Young University; 2 Saline Valley, Inyo Co.; 1 Walker Pass, Calif.; 4 Goldfield, Esmeralda Co.; 1 Tonapah, Nevada, deposited in the Entomological collection, California Academy of Sciences. 2 Saline Valley, Inyo Co., Calif., deposited in the Entomological collection of the U. S. National Museum.

Inyoensis differs from *granosa* in the surface texture of the prothorax Fig. 9 in being more ovate in form and the tubercles are more regular in size and shape. This species does not approach *granulata* in its sculpturing. The coxites are a little larger and more pointed on the genitalia of *inyoensis* than in *leechi*, a related species.

CHECK-LIST OF THE SPECIES OF ELEODES, 1961 ELEODES ESCH. 29-8

SUBGENUS MELANELEODES BLAIS. 09-33

1. *debilis* Lec. 58-185. N. Mex., Ariz., Tex. (Davis Mts.)
2. *carbonaria* (Say) 23-260. Colo., N. Mex., Ariz. (Gila Valley, Yuma), Tex., Ut. (St. George, Santa Clara, Wash. Co.; Moab, Grand Co.; Indianola, Sanpete Co.); Wyo. (Cheyenne).
 - a. subsp. *im munis* Lec. 58-186. Ariz. (Tucson, Sta. Catalina Mts., Sta. Rita Range Reserve, Miami, Willcox, Indian Hot Springs, Picacho).
 - b. subsp. *interstitialis* Blais. 09-49. Ariz. (Sta. Catalina Mts.); Ut. (Paria, Kane Co.).
 - c. subsp. *soror* Lec. 58-185. Tex. (Eagle Pass, San Antonio, and Brownsville).
3. *vicina* Lec. 1852-133. Calif.; Northern Mexico.
4. *nitida* Csy. 91-58. Ariz. (Hauchuca Mts.)
5. *lineata* Blais. 39-55. Ariz. (Chiricahua and Sta. Catalina Mts.)
6. *ampla* Blais. 09-40. Ariz. (Pinal, Sta. Catalina, and Sta. Rita Mts., Lowell); N. Mex. (Santa Fe Canyon); Tex. (Brownsville).
7. *obsoleta* (Say) 23-261. Ka., N. Mex., Alberta (Medicine Hat); Colo. (Mesa Verda Nat'l Pk.); Ut. (La Sal, Grand Co.; Bears Ears, Blanding, San Juan Co.; Deep Creek Mt., Juab Co.); Tex. (Davis Mts.); Neb. (Grant, Pine Ridge, Sioux City).
 - a. subsp. *annectans* Blais. 09-60. Colo. (Gulnare, Las Animas Co.; Craig); N. Mex. (Luna); Ariz. (White Mts.); Ut. (Hurricane, Wash Co.)
 - b. subsp. *porcata* Csy. 90-396. Ariz. (Avivaipa, White Mts., Williams); N. Mex.; Ut. (La Sal, Moab, Grand Co.; Natural Bridges Nat'l Monument, San Juan Co.; Kanab, Johnson Canyon, Kane Co.; Escalante Desert, Garfield Co.; Hurricane, Wash. Co.)
8. *mazatzalensis* Blais. 25-379. Ariz. (Mazatzal Mts.)
9. *knausi* Blais. 09-40. N. Mex. (Cloudcroft); Colo. (Mesa Verde Nat'l Pk.)
10. *omissa* Lec. 58-186. So. Calif. (San Diego, Sta. Catalina Island)
 - a. subsp. *pygmaea* Blais. 09-77. So. Calif. (San Diego); L. Calif. (San Quintin).
 - b. subsp. *borealis* Blais. 09-79. N. Calif. (Tulare and Kern Co.)
 - c. subsp. *peninsularis* Blais. 09-79. L. Calif. (Sierra San Lazaro).
 - d. subsp. *tumida* Blais. 33-194. Calif. (Bass Lake, Medera Co.)
11. *parowana* Blais. 25-374. Ut. (Iron Co.)
 - a. subsp. *mimica* Blais. 29-375. Ut. (Bryce Nat'l Pk., Garfield Co.; Johnson Canyon, Kane Co., July 1953).
12. *quadricollis* Esch. 29-12. Calif., So. Calif.; Wyo. (Cheyenne).
 - a. subsp. *lassenica* Blais. 25-373. Calif. (Martin's Spring, Lassen Co.)
 - b. subsp. *anthracina* Blais. 09-87. Ariz. (Ft. Grant, Hot Springs, San

- Simon, Galiuro Mts., Catalina Springs, Tucson, Chiricahua Mts., Graham Mts., Miami, White Mts., Nogales).
 c. subsp. *lustrans* Blais. 09-89. Ariz. (Chiricahua Mts., Catalina Springs).
 13. *cuneaticollis* Csy. 90-397. Calif. (San Francisco, Marin, San Mateo and Alameda Cos.)
 14. *humeralis* Lec. 57-50. Ida., Wash., Ore., N. Calif., Ut. (Central, Wash. Co.)
latiuscula Walk. 66-329.
 15. *reducta* Blais. 25-377. Ut. (Cove Fort, Beaver Co.)
 16. *concinna* Blais. 25-381. Nev. (Verdi, Carson City, Reno); Calif. (Lassen Co.); Ut. (Aquarius Plateau, Garfield Co.; Pine Valley Mts., Wash. Co.; Lynndyl, Millard Co.; Sheep Creek, Daggett Co.); Ariz. (Kaibab Forest).
 17. *coloradensis* Blais. 25-380. Colo. (Leadville); Ariz. (Jacobs Lake, Kaibab Forest); Ut. (Torrey, Wayne Co.)
 18. *fuscipilosa* Blais. 25-376. Ut. (Parowan, Iron Co.)
 19. *tanneri* Blais. 31-74. Ut. (LaSal Mts., Elk Ridge, Bears Ears, San Juan Co.; Moab, Grand Co.)
 20. *rileyi* Csy. 92-57. Ariz.; Ida. (Tetonia); Ut. (Aspen Grove, Mt. Timpanogos, Utah Co.; Bears Ears, Elk Ridge, San Juan Co.); Posey Lake, Aquarius Plateau, Garfield Co.)
 21. *tricostata* (Say) 23-262. Mex.; Br. Am. Ariz. (Tuba City); Tex. (Quanah, Hardman Co.)
planata Sol. 48-366.
alternata Kby. 37-232.
robusta Lec. 58-183.
 22. *pedinoides* Lec. 58-183. Tex. (Dameron and Bosque Cos.)
 a. subsp. *asperata* Lec. 58-183. Ariz.
 23. *neomexicana* Blais. 09-41. N. Mex. (Cloudcroft).
 24. *speculicollis* Blais. 25-382. Tex. (Davis Mts.)
 25. *wenzeli* Blais. 25-381. Tex. (Alpine, Chisos Mts.)
 26. *halli* Blais. 41-37. Ariz. (Kayenta, Navajo Co.)

SUBGENUS LITHELEODES BLAIS. 09-34

27. *arcuata* Csy. 84-47. Ariz. (Sta. Rita and Chiricahua Mts.)
 28. *extricata* (Say) 23-261. Tex.; Br. Am.; Colo. (Buena Vista, Golden); Ariz. (Graham Mts.; White Mts.; Genease Mts.); Ut. (Cove Fort, Beaver Co.; La Sal Mts., Grand Co.); Alberta (Medicine Hat).
 a. subsp. *convexicollis* Blais. 09-123; 21-132. Wyo. (Laramie, Cody, Park Co.); Mont. (Blackfoot Indian Reservation).
 b. subsp. *cognata* Hald. 52-376. Blais. 42-140. Ut. (Great Salt Lake Desert, Arches Nat'l Monument, Grand Co.; Fruita, Wayne Co.; Johnson Canyon, Kane Co.; Buckhorn, Emery Co.; Bryce Nat'l Pk., Garfield Co.; Provo, Utah Co.; Mt. Pleasant, Sanpete Co.; Zion Nat'l Pk., Mountain Meadows, Wash. Co.); Wyo. (Cody, Park Co.); Ariz. (Sta. Catalina Mts., Chiricahua Mts., Lake Mary, Show Low); Tex. (Davis Mts.).
 c. subsp. *arizonensis* Blais. 09-116. Ariz. (Fort Huachuca).
 d. subsp. *utahensis* Blais. 21-131. Ut. (Stockton, Milford, Eureka; Notum, Wayne Co.; Aquarius Plateau, Garfield Co.; Lynndyl, Millard Co.); Ariz. (Pinal Mts.); Colo. (Gulnare); N. Mex. (Cloudcroft).
 e. subsp. *frigida* La Riv. 43-54. Nev. (Kyle Gorge, Charleston Mt., 10,000 ft., Clark Co.)
 29. *granulata* Lec. 57-50. Ore.; Calif. (Siskiyou Co.; Carrville, Trinity Co.)
subaspera Sol. 48-237.
subtuberculata Walk. 66-328.
 a. subsp. *obtusa* Lec. 61-352. Blais. 42-140. (eastern desert region)
 b. subsp. *aspera* Lec. 66-115. Blais. 42-140. Colo. (Gateway).
 30. *papillosa* Blais. 17-226. N. Calif. (Siskiyou Co.; Carrville, Trinity Co.)
 31. *letcheri* Blais. 09-133, 42-143. Nev. (Verdi); Ida. (Tetonia).
 32. *vandykei* Blais. 09-136, 18-384. Calif. (Medicine Lake; Siskiyou and Modoc Cos.); Wash. (McElroy).

- a. subsp. *modificata* Blais. 21-131. 42-141. B.C. (Vernon, Kamloops).
- b. subsp. *parvula* Blais. 09-137. 42-141. Ariz. (Dallas); Ida. (Blackfoot).
- c. subsp. *similis* Blais. 42-142. Ore. (Haines).

33. *carvina* Blais. 21-224. Calif. (Walker, Siskiyou Co.)

SUBGENUS TRICHELEODES BLAIS. 09-34

- 34. *hirsuta* Lec. 61-352. So. Calif.; Nev.; Ut. (Ibapah, Tooele Co.; Topaz Mt., Juab Co.; Hamblin Valley, Iron Co.; Copper Mts., Box Elder Co.)
- 35. *pilosa* Horn. 70-302. So. Calif.; Nev.; Ore.; Ut. (Zion Nat'l Pk., Wash. Co.; Dinosaur Nat'l Monument, Uinta Co.; Flaming Gorge, Daggett Co.; Johnson Canyon, Kane Co.; Boulder, Garfield Co.; Callas, Juab Co.); Ida. (Owyhee Co.)
a *pilifera* Boddy.⁶ 57-193. Or.
- 36. *leechi* Tanner, n. sp. Colo. (Gypsum Creek, San Miguel Co.; Mesa Verde Nat'l Pk.; Cortez); Ut. (Ute Mt., Ut.-Colo. State Line; Blanding; Cottonwood Wash; La Sal, San Juan Co.; Moab, Grand Co.)
- 37. *spoliata* Blais. 33-196. Ore. (Klamath Co.)
- 38. *barbata* Wickh. 18-256. N. Mex. (Willard).

SUBGENUS PSEUDELEODES BLAIS. 09-34

- 39. *gronosa* Lec. 66-116. Calif. (Lyon Pass, Colorado Desert, San Bernardino Co.); Nev.
- 40. *inyoensis* Tanner, n. sp. Calif. (Saline Valley, Inyo Co., Walker Pass); Nev. (Goldfield, Esmeralda Co., Tonapah).

SUBGENUS PROMIUS LEC. 62-226

- 41. *insularis* Linell. 01-181. L. Calif. (Grand Canyon; Cedros Island).
 - a. subsp. *terricola* Blais. 23-365. L. Calif. (El Taste; San Pedro; Sierra Lazaro.)
- 42. *subnitens* Lec. 41-134 Ariz. (White Mts., Sta. Catalina Mts., Sta. Rita Mts., Tucson); So. Calif.
- 43. *goryi* Sol. 48-237. Mex.; N. Mex.; Tex.
 - a. subsp. *seriata* Lec. 58-185. Blais 25-79. Tex.
- 44. *striolata* Lec. 58-185. Tex.; Mex.
- 45. *fusiformis* Lec. 58-184. Neb.; Kan.; Tex. (Marathon, Alpine).
- 46. *opaca* (Say) 23-262. Tex.; Neb.; Kan. (Ellsworth); Colo.; S. D. (Edgemont).

SUBGENUS HETEROPROMUS BLAIS. 09-33

- 47. *veterator* Horn. 74-33. Tex.

SUBGENUS ELEODES ESCH. 29-9

- 48. *obscura* (Say) 23-359. N. Mex.; Wash.
 - a. subsp. *dispersa* Lec. 58-182. Ariz. (White Mts.); Colo.; Ut. (Bluff, La Sal, Red Mesa, San Juan Co.)
- deletea* Lec. 58-182.
 - b. subsp. *sulcipennis* Mann. 43-226. Ore.; N. Calif.; Ida.; Ariz. (Pinal Mts., Arivaipa); Ut. (Topaz Mt., Juab Co.; Johnson Canyon, Kane Co.; Magatsu; Zion Nat'l Pk.; St. George, Wash. Co.; Indianola, Sanpete Co.); Nev. (Alamo).
- conjuncta* Walk. 66-329.
- convexicollis* Walk. 66-328.
- arata* Lec. 58-182.
 - c. subsp. *glabriuscula* Blais. 25-383. Tex. (Alpine, Livermore Peak, Davis Mts.)
- 49. *acuta* (Say) 23-258. Kan.; Tex.; Ariz. (Globe).
 - a. subsp. *pernigra* Blais. 37-128. Tex. (Katherine Sarita).
- 50. *suturalis* (Say) 23-257. Tex.; Neb. (Crawford); Kan. (Ellsworth); Colo. (Boulder).

⁶. I have not seen a specimen of *pilifera* but from the description, I think it is not a *gronosa*, but belongs to the *pilosa* group.

- a. var. *texana* Lec. 58-182. Kan.; Tex.; Colo.
51. *grandicollis* Mann. 43-266. Calif., So. Calif.
 a. subsp. *valida* Boh. 58-90. So. Calif. (San Diego, Los Angeles, Monterey, San Bernardino, and Kern Cos.); Ariz. (Yuma Desert, Sta. Marie River); Nev. (Alamo, Mercury).
52. *sanmartinensis* Blais. 21-220. So. Calif. Is. (San Martin Island).
binotata Walk. 66-329.
54. *hispidabris* (Say) 23-259. Colo.; Mex.; Ut. (Monticello, San Juan Co.; Heneville, Garfield Co.); Alberta (Medicine Hat).
lecontei Gemm. 70-122.
sulcata Lec. 52-67.
 a. subsp. *nuptia* Lec. 59-183. Blais. 25-384. Tex. (Laredo to Ringhold Barracks); Okla. (Fort Supply); Kan. (Medora); Colo. (Boulder).
 b. subsp. *attenuata* Blais. 18-168. Ariz. (Nogales, Sta. Cruz Co.).
 c. subsp. *convexa* Lec. 57-49. Blais. 25-384. (Prairie Pasco); N. Mex. (Columbus).
 d. subsp. *sculptilis* Blais. 09-220. Ariz. (Oracle, Williams, Ft. Grant, Ash Fork, and Yuma); N. Mex. (Las Vegas); Colo. (Denver); Ut. (Salt Lake City; St. George, Wash. Co.; Parowan, Iron Co.; Indianola, Sanpete Co.; Topaz Mt., Juab Co.; Lehi, Utah Co.).
 e. subsp. *imitabilis* Blais. 18-167. Ut. (Salt Lake Co.; Desert Range Exp. Station, Millard Co.; Escalante Desert, Garfield Co.); Ore. (The Dalles); Wash. (Walla Walla); Calif. (Saline Valley, Inyo Co.).
 f. subsp. *immunda* Blais. 25-79. Ariz.; B. C. (Oliver).
 g. subsp. *composita* Csy. 91-58. Tex.
55. *subpinguis* Blais. 09-247. Tex. (Cameron Co.)
56. *gracilis* Lec. 58-184. So. Calif.; N. Mex.; Ariz. (Sta. Rita Mts.).
 a. subsp. *distans* Blais. 09-242. Calif. (Ft. Tejon; Los Angeles Co.; Fairmont; Norwalk and Antelope Valley; Oak Creek, Kern Co.; Tehachapi Valley; Victorville).
57. *caudifera* Lec. 58-184. Colo.; Ariz. (Snowflake); Tex. (El Paso); Ut. (Bluff, San Juan Co.; La Sal, Grand Co.); N. Mex.
longipilosa Horn 91-42. Nev.; Calif.
58. *dentipes* Esch. 29-19. Calif. (San Fernando; Stanford Univ.; Pacific Grove; Harbor City; San Pedro; Murphy).
 a. var. *perpunctata* Blais. 18-386. Calif. (Eldorado; Tehama, Trinity, Contra Costa and San Mateo Cos.)
 b. subsp. *elongata* Blais. 09-254. Calif. (Mokelumne Hills, Calaveras Co.; Fresno Co.; Oakland).
 c. subsp. *tularensis* Blais. 25-386. Calif. (Northfork, Fresno Co.; Yosemite Nat'l Pk.)
 d. subsp. *paradoxa* Blais. 31-78.=*montana* Blais. preoccupied. Calif. (Sta. Cruz Mts., Sta. Cruz Co.)
 e. subsp. *sordida* Blais. 35-30. Calif. (Tulare Co.)
 f. subsp. *marinae* Blais. 21-218. Calif. (Fairfax, Marin Co.)
 g. subsp. *confinis* Blais. 95-237. Calif. (Mokelumne Hill, Calaveras Co.; Napa Co.; Sta. Clara Co.; Tulare Co.; Sonoma Co.)
 h. subsp. *elegans* Csy. 90-401. N. Calif. (Hoopa Valley, Humboldt Co.)
 i. subsp. *prominens* Csy. 90-401. Calif. (Port Harford, San Luis Obispo Co.)
 j. subsp. *pertenuis* Blais. 09-253. Calif. (Kaweah, Tulare Co.; Watson Springs; Martinez, Contra Costa Co.)
59. *rossi* Blais. 43-241. L. Calif. (Comonder).
60. *subcylindrica* Csy. 90-400. Ariz.
61. *amedeensis* Blais. 33-199. Calif. (Palm Springs; La Puerta, Imperial Co.; Ahwahnee; Yosemite Valley, Maripose Co.); Nev. (Goldfield, Esmeralda Co.)
62. *striatipennis* Blais. 42-134. Nev. (Walker Lake; Paradise Valley; and Tonopah).
63. *armata* Lec. 51-134. Colo.; Ariz. (Picacho, Tucson, Superior); Calif. (Am-

- boy); So. Calif.; Nev. (Alamo, Mercury); Ut. Sta. Clara, Wash. Co.)
- a. var. *pumila* Blais. 33-197. Calif. (El Centra, Imperial Co.).
 - b. subsp. *impotens* Blais. 95-236. Calif. (Merced Co; David).
64. *inepta* Blais. 25-334. L. Calif. (Angulo Rock; Asuncion Island—Pacific Coastal Group).
65. *marthae* Blais. 43-243. L. Calif. (Mesquital).
66. *simondsi* Blais. 43-247. L. Calif. (Mesquital).
67. *militaris* Horn 70-303. L. Calif. (San Quintin, San Vicente, Cedroso Island); Ariz.
- a. subsp. *femorata* Lec. 51-134. Calif., So. Calif.
68. *mexicana* Blais. 43-246⁷. L. Calif. (near Sta. Rosalia; El Refugio and Mesquital).
- blaisdelli* Blkwr. 45-521.
69. *loretensis* Blais. 23-262. L. Calif. (Loreto; Las Animas Bay and Angeles Bay).
70. *vanduzeei* Blais. 23-264. L. Calif. (Mulege; Sta. Rosalia).
71. *morbosa* Blais. 25-335. L. Calif. (Angulo Rock; Asuncion Island; Pacific Coastal Group; San Quintin and Ensenada).
72. *moesta* Blais. 21-221. 43-246. L. Calif. (San Martin Island; San Vicente).
73. *acuticauda* Lec. 51-135. Calif., So. Calif. (San Diego); L. Calif. (San Pedro Martir, near Ensenada and Santo Tomas).
- a. subsp. *punctata* Blais. 09-278. Calif. (San Diego).
74. *laticollis* Lec. 51-135. Calif. (San Diego Co.; Fort Tejon).
- a. subsp. *minor* Blais. 09-283. Calif. (San Diego).
 - b. subsp. *apprima* Blais. 21-219. So. Calif. (San Nicolas Island).
75. *eschscholtzi* Sol. 48-238. Mex.; Tex.
- a. subsp. *lucae* Lec. 66-114. Blais. 43-249. L. Calif. (Cape San Lucas; Sta. Rosa; San Jose del Cabo; San Pedro; LaPaz and Santiago; Mira-glores; near San Bartolo; Trunfo; Mesquital).
 - b. subsp. *inflata* Blais. 43-249. L. Calif. (Cape San Lucas; Venancia).
76. *mutilata* Blais. 21-222. L. Calif. (Sierra Laguna).
77. *adumbrata* Blais. 25-332. L. Calif. (Middle San Senito Island; Pacific Coastal group; Arroys del Rosarito, Rosario; San Vicente, near Punta Prieta).
78. *discincta* Blais. 25-333. L. Calif. (Natividad Island; Pacific Coastal Group; Arroyo del Rosarito; Rosario; San Vicente, near Punta Prieta).
79. *tenuipes* Csy. 90-339. Tex.
80. *wickhami* Horn. 91-41. Ariz.
81. *ventricosa* Lec. 58-186. Tex.; Mex.
- a. subsp. *falli* Blais. 09-235. Tex. (El Paso, Fort Bliss).

SUBGENUS BLAPYLIS HORN. 70-301

82. *snowi* Blais. 09-311. Colo. (Ouray); Ariz. (Williams, Flagstaff, Oak Creek, Colorado River); N. Mex. (Santa Fe Canyon, Cloudfrost).
83. *lecontei* Horn. 70-304. Colo.
- subaspera* Lec. 66-115. preoccupied.
84. *tenebrosa* Horn. 70-304. S. Calif.; Nev.; Ut. (Pine Valley, Wash. Co.; Raft River Mts., Box Elder Co.; Bryce Nat'l Pk.; Duchesne; Widtsoe); Ida. (Rexburg).
- a. var. *nana* Blais. 09-328. So. Calif.; Nev. (Carson City, Verdi).
85. *robinetti* Boddy. 57-194. Ore. (Robinette; Bear Springs, Wasco Co.; Bend, Manns Lake, Maupis and Quinton); Wash. (Cooks Lake, White Salmon, Walla Walla, and Wawawai).
86. *inculta* Lec. 51-135. Calif. (San Miguel Island).
- a. subsp. *affinis* Blais. 18-384. Calif. (Sta. Cruz Island).

7. *Mexicana* Blais 43-246 L. Calif. is a valid species. Blackwelder evidently confused *Embaphion mexicana*, described by Blaidsell p. 160 in his paper entitled, "New Species of *Eleodes* from Mexico in the British Museum (Col. Tenebrionidae)," *Stylops*, Vol. IV, Part 7, pp. 156-160, 1934, with Dr. Blaidsell's *Eleodes mexicana* of 1943. This oversight is further evident since Blackwelder failed to record *Embaphion mexicana* Blais. in his catalogue, "Checklist of the Coleopterous Insects of Mexico, Central America, the West Indies, and South America," part 3, page 522, 1945.

87. *consobrina* Lec. 51-135. Calif. (So. Calif.; Mt. Pass); Ut. (Glacier Lake, Mt. Timpanogos, Elev. 10,500 ft., Utah Co.)
88. *kawaeana* Blais. 33-203. Calif. (Kaweah, Tulare Co.)
89. *scabripennis* Lec. 59-77. Blais. 33-201. Calif., So. Calif. (Hot Springs, Tulare Co.; Tejon).
90. *blanchardi* Blais. 09-347. Calif. (San Diego Co.; Port Harford, San Luis Obispo Co.)
91. *fuchsi* Blais. 09-343. Calif. (Tulare Co.; Marbel Fork; Kaweah River; Yosemite).
92. *neotomae* Blais. 09-312. Calif. (San Diego Co.; Port Harford, San Luis Obispo Co.)
93. *horni* Blais. 09-350. 18-385. Calif. (Plumas and Eldorado Cos.)
a. subsp. *fenesi* Blais. 25-77. Calif. (Bishop, Inyo Co.)
b. subsp. *monticola* Blais. 18-385. Calif. (Calaveras, Shasta and Tulare Cos.)
94. *manni* Blais. 17-221. Wash. (Wawawai, Ellensburg, Almota).
a. subsp. *sierra* Blais. 25-78. Calif. (Kings Canyon, Fresno, Co.)
b. subsp. *patulicollis* Blais. 31-78. new name for *dilaticollis* Blais. 25-388. Wash. (Ritzville Lake, McElroy, Paha); Ut. (The Pass, Table Cliff Mt., Garfield Co.)
c. subsp. *variolosa* Blais. 17-223. Wash. (Wenatchee, Ellensburg).
95. *parvicollis* Esch. 29-11. Calif. (So. Calif.; Pacific Grove).
a. subsp. *farallonica* Blais. new name 25-80. see Blais. 09-356. Calif. (San Francisco Bay Area; San Joaquin and Sacramento Valleys; Faralone Islands).
b. subsp. *planata* Esch. 29-12. Calif.
c. subsp. *squalida* Blais. 18-380. Calif. (Dabis's Meadow near Railroad Flat, Calaveras Co.)
96. *producta* Mann. 43-271. Calif. (Maraposa, Big Trees, Yosemite Nat'l Pk.)
a. subsp. *alticola* Blais. 25-387. Calif. (Piute Mt., Kern Co.; Fallen Leaf Lake, Big Trees).
b. subsp. *trita* Blais. 17-225. Ore. (Josephine Co.); N. Calif. (Humboldt and Del Norte Cos.; Piute Mt., Kern Co.)
c. subsp. *constricta* Lec. 58-187. Calif. (Yosemite Nat'l Pk.)
97. *scabriventris* Blais. 33-202. Calif. (Camp Potwisha, Sequoia Nat'l Pk., Tulare Co.)
98. *oblonga* Blais. 33-206. Calif.
99. *hoppingi* Blais. 09-312. Calif. (Eldorado Co.; Mt. Tallac, Tahoe); Nev. (Mt. Rose); Ut. (Navajo Mt.)
100. *clavicornis* Esch. 29-11. Calif. (San Francisco; Ocean Beach).
impressicollis Boh. 58-90.
101. *scabrosa* Esch. 29-11. Calif.; Ore. (Gold Beach).
102. *rotundipennis* Lec. 57-50. Ore.; Wash. (Friday Harbor); B.C. (Pender Harbor, Kamloops).
a. var. *versatilis* Blais. 21-217. Ore. (Colestin, Jackson Co.)
103. *oregona* Blais. 41-157. Ore. (Bear Springs, Eugene).
104. *cordata* Esch. 29-11. Calif. (Stanford Univ.; Jasper Ridge, San Mateo Co.; San Francisco; Pacific Grove; Berkeley; Mt. Diablo).
105. *tuberculata* Esch. 29-12. Calif.⁸
intricata Mann. 43-273.
stricta Lec. 57-50.
a. subsp. *horrida* Blais. 18-383. Calif. (Davis Meadow near Railroad Flat, Calaveras Co.)

8. "Indentata described above, (Blais. 35-28) belongs to the *Cordata Group* (1833). The phases referable to the latter group, show farther differential group characters: those having greater affinity with *cordata* Esch. and those with *tuberculata* Esch. These ultimate affinities indicate the genealogical relationships.

Cordata Esch. is somewhat a larger species with a varying dull luster and the sculpturing is not as coarse as in *tuberculata* Esch. and its related forms. The views expressed from time to time may differ from those given in my Monograph (Bull. 63, U. S. Nat. Mus.). Twenty-five years have passed since that work was given forth and much new material has come to hand since then which has necessarily resulted in changes in my knowledge regarding species and their relationships." Blais. 35-29

- b. subsp.*patruelis* Blais. 18-382. Ut. (Provo Canyon, Zion Nat'l Pk., Bryce Nat'l Pk., Spanish Fork, Utah Lake, La Sal Mts., Indianola, Fruita); Nev. (Lehman Cave Nat'l Mon.; Mt. Wheeler); Ariz. (Jacob Lake, Kaibab Forest).
- c. var.*adulterina* Blais. 17-244. Calif. (Eldorado, Plumas, Del Norte, Humboldt, Placer, Monterey, Shasta and Lake Cos.)
- d. var. *hybrida* Blais. 17-225. N. Calif. (Plumas and Lake Cos., Yosemite Nat'l Pk.)
- e. var. *sublaevis* Blais. 09-381. N. N. Blais. 24-80. Calif. (Near San Francisco Bay).
- 106. *indentata* Blais. 35-28. Wash. (Mt. Ranier, Pierce Co.)
- 107. *primeliodes* Mann. 43-274. Wash.; Nev.; Mont.
- 108. *nunenmacheri* Blais. 18-163. Ore. (Klamath and Lake Cos.); Calif. (Lassen and Modoc Cos.); Wash. (Granger); B. C. (Kamloops).
 - a. subsp. *verrucula* Blais. 18-164. Calif. (Lassen and Modoc Cos.); Ore. (Klamath and Lake Cos.)
- 109. *novoverrucula* Boddy 57-195. Wash. (Grand Coulee, Park Lake); B. C.; Ida.; Mont.
- 110. *brunnipes* Csy. 90-402. Ida.; Wyo.; Colo. (Salida).
 - a. subsp. *brevisetosa* Blais. 18-162. Calif. (Lassen Co.); Nev. (Verdi)
- 111. *propinqua* Blais. 18-165. Calif. (Modoc Co.); Ore. (Grants Pass).
- 112. *strumosa* Blais. 31-76. Ut. (Deep Creek Mts., Tooele Co.); Nev. (Lehman Cave, Mt. Wheeler, White Pine Co.)
- 113. *caseyi* Blais. 09-313. Nev. (Verdi); Calif. (Bodie).

SUBGENUS ARPELEODES BLAIS. 1937-128⁹

- 114. *tibialis* Blais. 09-313. L. Calif. (Sierra Laguna and La Chuparosa).

SUBGENUS METABLAPYLIS BLAIS. 09-34

- 115. *nigrina* Lec. 58-186. Ore.; Colo.; Ariz.; Ut. (Pine Valley Mts., Wash. Co.; Bryce Nat'l Pk.; Blanding, San Juan Co.; Steep Creek, Boulder Mt., Garfield Co.); Wash. (Prosser); Nev. (Central and Northern Part of the state).
 - a. subsp. *perlonga* Blais. 09-393. Wyo. (Rock Springs, Sweet Water Co.)
 - b. subsp. *diformis* Blais. 25-389. Wash. (Ritzville); Ut. (Indianola, Fairview, Mt. Pleasant, Sanpete Co.)
 - c. subsp. *maclayi* Boddy 57-197. Ore. (Talent; Lake Creek, Jackson Co.; Medford).
- 116. *dissimilis* Blais. 09-398. Ariz. (Fort Grant, Sta. Rita Mts.; Chiricahua Mts.; Graham Mts.; Oracle, and Williams).
 - a. subsp. *nevadensis* Blais. 09-402. Nev. (Pioche); Calif. (Palm Springs); Ariz. (Tucson and Pinal Mts.); Ut. (Zion Nat'l Pk.; Escalante Desert, Kane Co.; St. George, Hurricane, Wash. Co.)
- 117. *schwarzi* Blais. 09-393. Wash. (Pullman, Toppenish).
- 118. *delicata* Blais. 29-164. Ariz. (Douglas); Ut. (Hurricane, Wash. Co.).
- 119. *californica* Blais. 29-165. Calif. (Palm Springs, Riverside Co.; Saline Valley, Inyo Co.)

SUBGENUS STENELEODES BLAIS. 09-33

- 120. *gigantea* Mann. 43-276. N. Calif. (Tehama Co.; Redondo; San Diego).
 - a. subsp. *meridionalis* Blais. 18-387. So. Calif. (San Diego; Kern and Sta. Cruz Cos.); L. Calif. (San Pedro Martir)
 - b. subsp. *gentilis* Lec. 58-187. Calif., So. Calif., L. Calif. (San Pedro, Martiz and San Francisquito)
 - c. subsp. *estriata* Csy. 90-398. Calif. (San Francisco).
- 121. *longicollis* Lec. 51-143. Ariz. (Sta. Rita Mts.); N. Mex.; Tex.; Ut. (Hurricane, Wash. Co.; Bluff, San Juan Co.; Utah Lake Area; Lehi, Utah Co.)
 - haydeni* Lec. 58-186.

⁹. The subgenus *Arpeleodes* in Dr. Blairsell's paper, 1937, pp. 128, is spelled differently on pp. 129 of this same paper.

122. *ornatipennis* Blais. 37-129. N. Mex.
 123. *innocens* Lec. 66-114. L. Calif. (Cape San Lucas, Eltaste, Sierra El Chinche, Miraflores).

SUBGENUS HOLELEODES BLAIS. 37-132

124. *beameri* Blais. 37-132. Ariz. (Huachuca and Chiricahua Mts.)
 125. *bryanti* Blais. 37-134. Ariz. (Graham Mts.)
 126. *palmerleensis* Blais. 37-136. Ariz. (Near Palmerlee).

SUBGENUS DISCOGENIS LE CONTE. 66-114

127. *marginata* Esch. 29-10. Calif. (Ft. Bragg, San Francisco, Pacific Grove); So. Calif.
fischeri Mann. 43-137.
 128. *scabricula* Lec. 58-187. Calif. (Yosemite Nat'l Pk.; Marapose Big Trees); Nev. (Lake Tahoe Area).
 subsp. *acutangula* Blais. 21-225. Calif. (Channel Meadows and Brecker-ridge Mt., Kern Co.; West Point, Yosemite Nat'l Pk.)

GENUS TROGLODERUS LEC. 79-2¹⁰

129. *costatus* Lec. 79-3. Nev.; Ida.; Ariz.
 subsp. *tuberculatus* Blais. 09-486. Calif. (So. Calif.); Ut. (Willow Tank, Escalante Desert, Kane Co.; Delta, Millard Co.; Woodside, Emery Co.; Hanksville, Wayne Co.; La Sal, San Juan Co.; Duchesne, Duchesne Co.; Grafton, Wash. Co.); Ariz. (Tuba City).
 b. subsp. *nevadus* La Riv. 42-437. Nev.; Calif.
 c. subsp. *vandykei* La Riv. 46-41. So. Calif.

GENUS EMBAPHION SAY. 23-254

130. *depressum* Lec. 51-136. Calif. (So. Calif.)
 131. *elongatum* Horn. 70-321. Nev.; Calif.; Ut. (Red Mesa, San Juan Co.)
 132. *glabrum* Blais. 09-453. Ariz.; N. Mex.; Ut. (Zion Nat'l Park, Wash. Co.; Henrieville, Garfield Co.; Indianola, Sanpete Co.; Moab, Grand Co.)
 133. *contractum* Blais. 09-453. N. Mex.
 134. *planum* Horn 70-321. Kan.; Colo.; N. Mex.; Ut. (Bluff, San Juan Co.)
 135. *blaisdelli* Benedict 27-46. N. Mex. (Bat Cave, Carlsbad Cavern).
 136. *contusum* Lec. 58-20. Wyo.; Colo.; Ariz.; Texas.
 a. subsp. *laminatum* Csny. 90-403. Tex.
 137. *muricatum* Say. Tex.; Colo.; Kan.; Neb.; S. Dak.; Alberta (Medicine Hat).

GENUS ELEODIMORPHA BLAIS. 09-477

138. *bolcan* Blais. 09-479. So. Calif.

GENUS NEOBAPHION BLAIS. 25-390

139. *planipennis* (Lec.) N. Mex.; Ariz. (Graham Mts., Chiricahua Mts., Sta. Catalina Mts.); Colo. (Mesa Verda Nat'l Pk.); Ut. (La Sal Mts.)
 140. *elongatum* Blais. 33-208. Nev. (Yerrington).

GENUS LARIVERIUS BLAIS. 47-61

141. *tibialis* Blais. 47-61. Nev. (Pyramid Lake; Mineral Co.; San Dunes).

¹⁰. I have before me specimens of the species now assigned to this genus, with the exception of *vandykei*. I agree with the thinking of La Rivers as presented in the Ento. News, Vol. LVII, pp. 35-44, 1949.

LITERATURE CITED

- Blaisdell, Frank E., 1895. New California Coleoptera. Ento. News, Vol. 6, pp. 235-238.
1909. A Monographic Revision of the Coleoptera Belonging to the Tenebrionidae Tribe Eleodiini, inhabiting the United States, Lower California and Adjacent Islands. Bull. 63, U. S. Nat. Mus., pp. 1-524, pls. 1-13.
- 1910. Studies in the Tenebrionid Tribe Eleodiini—Order Coleoptera. Ento. News. Vol. 21, pp. 60-67.
- 1917. Studies in the Tenebrionid Tribe Eleodiini No. 3 (Coleoptera). Ento. News, Vol. 28, pp. 221-227.
- 1918a. Studies in the Tenebrionid Tribe Eleodiini No. 3 (Coleoptera). Ento. News, Vol. 29, pp. 162-169.
- 1918b. Studies in the Tenebrionid Tribe Eleodiini No. 4 (Coleoptera). Ento. News, Vol. 29, pp. 380-387.
- 1921a. New Species of Melyridae, Chrysomelidae and Tenebrionidae, (Coleoptera). Stanford Univ. Publ. Univ. Series, Biol. Sci. I, pp. 220.
- 1921b. Miscellaneous Studies in the Coleoptera, No. 1, Can. Ento. Vol. 53, pp. 129-132.
- 1923. Expedition of the California Academy of Sciences to the Gulf of California in 1921 (Tenebrionidae). Proc. Calif. Acad. of Sci., 4th series, Vol. XII, No. 12, pp. 201-288.
- 1925a. Expedition to Guadalupe Island, Mexico in 1922. (Coleoptera). Proc. Calif. Acad. Sci. 4th series, Vol. XIV, pp. 321-343.
- 1925b. Studies in Tenebrionidae, No. 2. Calif. Acad. Sci., 4th series, Vol. XIV, pp. 369-390.
- 1925c. Revised Check-list of the Species of *Eleodes* Inhabiting America, North of Mexico, Including Lower California and Adjacent Islands. Pan-Pac. Ento. Vol. II, pp. 77-80.
- 1929. Revised Synopsis of the Species of *Eleodes* Belonging to the Subgenus Metablapylis with Description of Two New Species (Coleoptera) Pan-Pac. Ento. Vol. 5, pp. 163-166.
- 1931. Two New Species of *Eleodes* from Utah. (Coleoptera: Tenebrionidae). Pan-Pac. Ento., Vol. VIII, pp. 74-78.
- 1933. Studies in the Tenebrionidae, No. 3, A Monographic Revision of the Species of *Centronopus* Inhabiting America, North of Mexico (Coleoptera: Tenebrionidae). Trans. Am. Ent. Soc. LIX, pp. 191-210.
- 1935a. Two New Species of *Eleodes* from the Pacific Coast Region. (Coleoptera Tenebrionidae). Can. Ento. Vol. LXVII, pp. 28-31. Feb.
- 1935b. New Species of *Eleodes* from Mexico in the British Museum (Coleoptera: Tenebrionidae). Stylops: A Journal of Taxonomic Entomology. Vol. 4, 7, pp. 156-160.
- 1937. Miscellaneous Studies in the Coleoptera, No. 5 (Tenebrionidae and Melyridae). Trans. Am. Ento. Soc., Vol. LXIII, pp. 127-145.

- 1941a. A Species of *Eleodes* from Northeastern Arizona (Coleoptera: Tenebrionidae). Pan-Pac. Ento. Vol. XVII, pp. 37-39.
- 1941b. A New Species of *Eleodes* from Oregon Belonging to the Subgenus Blapylis (Coleoptera: Tenebrionidae). Pan-Pac. Ento. Vol. XVII, pp. 156-159.
- 1942. Miscellaneous Studies in the Coleoptera No. 6, (Melyridae and Tenebrionidae) Trans. Am. Ento. Soc. Vol. LXVIII, pp. 129-149.
- 1943. Contributions Toward a Knowledge of the Insect Fauna of Lower California, No. 7, Coleoptera: Tenebrionidae. Proc. Calif. Acad. of Sci., Vol. XXIV, No. 7, pp. 171-288. pls. 10-11.
- 1947. A New Genus and Species of the Coleopterous Family Tenebrionidae. Pan-Pac. Ento. Vol. XXIII, No. 2, pp. 59-62.
- Blackwelder, Richard E., 1939. Fourth Supplement 1933 to 1938 (inclusive) to Leng Catalogue of Coleoptera of America, North of Mexico. pp. 1-146.
- and Ruth M., 1948. Fifth Supplement, 1939 to 1947 (inclusive) pp. 1-87. (The Leng Catalogue and All Supplements published by John D. Sherman, Jr., Mount Vernon, N. Y.).
- Boddy, Dennis W., 1957. New Species and Subspecies of Tenebrionidae (Coleoptera). Pan-Pac. Ento. Vol. 33. No. 4, pp. 187-199.
- Casey, Thomas L., 1890. Coleopterological Notices II. Annals N. Y. Acad. Sci. Vol. V, pp. 394-403.
- Gebien, H., 1910. Coleopterorum Catalogues, Pars. 22, pp. 241-252. W. Junk, Berlin.
- Horn, George H., 1870. Revision of the Tenebrionidae of America, North of Mexico. Trans. Am. Phil. Soc. Vol. XIV, New Series, pp. 253-454. 2 pls.
- La Rivers, Ira, 1943. A List of the *Eleodes* of Nevada, with the Description of a New Subspecies (Coleoptera: Tenebrionidae). Jour. of Ento. and Zool., Vol. 35, No. 4, pp. 53-61.
- La Rivers, Ira, 1946. On the Genus *Trogloderus* LeConte (Coleoptera: Tenebrionidae). Ento. News, Vol. 57, No. 2, pp. 35-44.
- 1948. Notes on the Eleodini (Coleoptera: Tenebrionidae). Ento. News, Vol. 59, No. 4, pp. 96-101.
- LeConte, John L. 1851-1852. Description of New Species of Coleoptera from California. Am. Lyc. Nat. Hist. Vol. 5, pp. 125-216.
- 1858. Notes on the Species of *Eleodes* of the United States. Proc. Acad. Nat. Sci. of Philadelphia. pp. 180-188.
- Leng, Charles W., 1920. Catalogue of the Coleoptera of America, North of Mexico. pp. 1-470. (Eleodini, pp. 227-229.)
- and Mutchler, A. J., 1927. Supplement 1919 to 1924 (inclusive) pp. 1-78. 1933. Second and Third Supplements, 1925 to 1932 (inclusive), pp. 1-112.
- Say, Thomas, 1823. Desc. Expedition to Rocky Mountains. Jour. Acad. Nat. Sci. of Philadelphia, Vol. III, pp. 139-216.
- Wickham, Henry F., 1918. An Interesting New Species of *Eleodes*. (Coleoptera: Tenebrionidae). Ento. News, Vol. XXIX, pp. 255-257.